been hitherto invariably assumed by the advocates of the doctrine of liberty, as well as by those of that of necessity, that the justice of blame, whether asserted or denied, is involved in and inseparable from that of punishment. Even Mr. J. S. Mill is most unaccountably reticent on this point. He appears to evade entirely and constantly, any consideration whatever of praise and blame. But I believe I have shown that there is no necessary connection between the two; that the one is powerful for evil, and the other for good. The vital inconsistencies, and therefore invalidity of all other moral systems with which I am acquainted, can be distinguished almost as readily and clearly as their utter futility as guides of human conduct. I have long ceased to wonder at their abortive results. The appalling numbers of our fellow-creatures which our traditional systems consign or leave to a fate of hopeless degradation, crime, and misery, must be apparent to the most obtuse; and resignation to such results appears to me one of the worst and most lamentable of them all. Large numbers of men and women of all classes are notoriously immoral; and current theories which pretend to be adequate or adapted to make them moral, are therefore glaring failures or impostures. Therefore the present state, and the principles of society indisputably demand a radical reform.

But should my system be proved, which I take leave to doubt, to be as inconsistent and worthless as the rest, still it seems not impossible that its consideration may give a clue to a better. Let my proposition, then, be discussed, and may the speedy result be such as all good men will delight to witness—consistency, and therefore truth, in the theory; and purity in the practice of morality.

Art. XIX.—*On the Species of Wombats.* (Abstract.)

By Professor M'Coy.

[Read 9th September, 1867.]

Professor M'Coy laid on the table well-preserved skins and osteological preparations from the series he had caused to be prepared for the National Museum, of all the known species, both good and doubtful, of the genus *Phascolomys*, and explained their characters in detail.

Until comparatively recently there was only one species generally known to zoologists, the *Phascolomys wombat.* This is now known to be confined to Tasmania and other islands south of the Australian continent, and as I have demonstrated from the specimens on the table, it is specifically distinguishable with ease and certainty by the characters of the skull and skin pointed out by Dr. Murie and others, from the Wombats of the main land, which were at one time supposed to be referable to it. Of the continental species two had been defined and named by Professor Owen in his Catalogue of the Osteological Collections in the Museum of the College of Surgeons, from the skulls only, the *P. latifrons* and the *P. platyrhinus;* but no zoologist had satisfactorily connected these with the skins until 1861, when Mr. Angas and myself independently, and at the same time, drew up descriptions of a soft furred Wombat from South Australia, two individuals of which were received by our Acclimatization Society; the skin and skeleton of the one described by me being now on the table. Mr. Angas suggested that this might be the *P. latifrons* of Owen, but as he only saw the skin, and that species was founded on a skull, this specific reference was only a surmise, which was generally rejected, as it could not then be supported by any argument. The specimen at my disposal, however, having afforded me an opportunity of examining its bones, I definitely determined for the first time the relation of the skin and skull of the *P. latifrons,* by showing the identity of the skull before you with that firstdescribed under that name by Owen in the "Zoological Proceedings" for 1845. This determination I forwarded with figures and descriptions to Mr. Gould, since published in the last number of his work "On the Mammals of Australia," but by an unfortunate mistake he submitted the skull of a different species to Mr. Flower for comparison with Professor Owen's type skull of *P. latifrons,* and as they did not agree, he supposed my determination wrong, and using an external character which I was the first to point out (it having escaped Mr. Angas), namely, the hairy instead of naked muffle. as specific, he proposed for the animal the name of *P. lasiorhinus;* Dr. Gray shortly after, showing that the difference between a hairy and naked muffle in the *Halmaturus,* and *Macropus,* and in *Bos,* and *Ovibos* was generic in value, formed of it a separate genus, naming the creature *Lasiorhinus M'Coyi.* Dr. Murie, in his paper in the "Proceedings of the Zoological Society" for

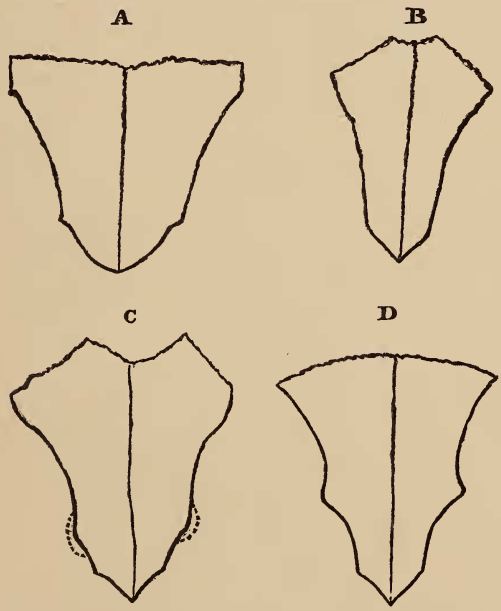
December 1865, shows that my original determination was perfectly correct, and that the supposed correction of Mr. Flower, accepted by Gould, was erroneous.

Dr. Murie, in his paper above cited, gives some osteological characters for the hairy-nosed wombat, differing from those in the skeleton before you ; he counts, for instance, thirteen dorsal vertebræ, and thirteen pairs of ribs, while there are really fourteen, the fourteenth or last rib being only about half an inch long was probably overlooked ; and this may have led to his counting six lumbar vertebræ, when there are really only five. The caudal vertebræ are not alluded to, but they are extraordinarily numerous, being sixteen in number, while the Tasmanian Wombat has only eleven, and the common Victorian Wombat twelve.

The *Sacrum* is another remarkable portion of the skeleton not referred to in Dr. Murie's paper, but which I find singularly interesting ; from the unexpected differences it presents in the different species. In the *Lasiorhinus*, two sacral vertebræ anchylose with the illium, but three are anchylosed together by their transverse processes in the male, and the fourth nearly so in the female. The sacrum in *P. platyrhinus* is formed of four vertebræ united by their transverse processes, the two anterior being anchylosed to the illium. In the Tasmanian *P. wombat* there is an extraordinary difference in the sacrum, which is composed of seven vertebræ, of which the first and second are anchylosed to the illium ; the first five anchylosed by their transverse processes into one group, and the sixth and seventh anchylosed by their transverse processes into a second group which is attached to the ischium. The sacrum of the common Victorian fossil species, the *Phascolomys pliocenus* (M'Coy), is composed of seven vertebræ, all anchylosed by their bodies, the first to the fourth anchylosed by their transverse processes into one group, the three anterior of which are anchylosed to the illium, and the sixth and seventh anchylosed by the transverse processes into a second group, closely approaching the ischium.

The most common Victorian wombat, the large brown continental species, has now been proved by Dr. Murie to be, as I originally suggested, identical with the *Phascolomys platyrhinus* of Owen, one of the species founded by him on the skull only in 1853, but overlooked ever since by zoologists, and the original skull of which has recently been compared at the College of Surgeons with the skulls taken from

such skins as are now before you. The *P. Angus* (gray), is a synonym of this. The black wombat, *Phascolomys niger* of Gould is, as you see by the fine adult, male and female, and the young specimens before you, which I have lately had trapped at the Goulbourn river for the National Museum collection, of an intense black colour, not only in the adult of both sexes, but in the young, and on getting the skeletons of those stuffed specimens mounted, I nearly fell into the mistake of supposing that a character might be found in the nasal bones, distinguishing the species from the brown *P. platyrhinus* more satisfactorily than the sole external character of colour on which Mr. Gould relied. The first



Nasal Bones of the four species of Wombats, reduced to half the natural length.

A. Lasiorhinus. B. Tasmanian Wombat.
C. P. platyrhinus. D. P. setosus.

adult skull and that of the young agreed in having a small abruptly rounded lobe, at slightly more than one-third the length of the outer side of each nasal bone, but fortunately I had the skeleton of the third specimen prepared, and found to my astonishment that it quite agreed with the ordinary

brown examples of *P. platyrhinus* in having the sides of the nasal bones converging simply and regularly towards the front. And to settle the matter I found the skull of the largest of the brown specimens on the table to have presented the small outward lobes (indicated by dotted lines on the wood-cut) as in the first mentioned black examples. There can be no doubt then, from the skins and skeletons before you, that the *P. niger* (Gould), is only a variety of the *P. platyrhinus* (Owen). The skeletons of both agreeing in having fifteen ribs, the last being four inches long in the males, but only from one to three inches long in the females examined; the sacrum of four anchylosed vertebræ, two anchylosed to the illium, and twelve caudal vertebræ.

The fourth good living species of wombat that I am glad to be able to demonstrate the distinctness of to the Society, is the *Phascolomys setosus* of Gray. The stuffed specimen before you from near Adelaide, shows the characters on which Dr. Gray relied, in establishing the species, of which the light ashy yellowish brown colour, and the harsh fur, with numerous coarse blackish bristles scattered through it, are the principal ones, obviously distinguishing it from the other species. The originally described specimen which is the only one made known until this evening, had unfortunately no skull, and in the absence of osteological or more important external characters, Dr. Murie in his paper above quoted, sets *P. setosus* down as a synonym of the *P. platyrhinus*. I have the great pleasure of showing you now that the species is really a good one by the characters of the skull, the nasal bone, of which much more nearly resembles those of the broad-fronted wombat than of the common brown *P. platyrhinus* in the great width and flatness of their posterior sutures. It differs from that species, however, in having the posterior suture, joining the nasals to the frontal gently convex, instead of nearly straight, and in having at rather more than half the length of each side from the anterior end a rounded angulation, giving a peculiar width to the middle of the nasals, as seen in the cut marked D.